Amendments to the Claims:

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended). A method for steering an agricultural vehicle comprising:

receiving global positioning system (GPS) data including position and velocity information corresponding to at least one of a position, velocity, and course of said vehicle;

receiving a yaw rate signal corresponding to a yaw rate of said vehicle;

computing a compensated heading for said vehicle based on an integration of said yaw rate signal, said compensated heading comprising a blend of said yaw rate signal with heading information based on said GPS data, wherein said compensated heading is further dynamically calibrated based on said GPS data;

for each desired swath comprising a plurality of desired positions and desired headings:

computing an actual track and a cross track error from said desired swath based on said compensated heading and said position, wherein said position is compared with a selected desired position of said plurality of desired positions and said compensated heading is compared with a selected desired heading of said plurality of desired headings:

calculating a desired radius of curvature to arrive at said desired ~~track~~ swath with a desired heading;

said desired radius of curvature calculating step including generating radius of curvature data based on best fit algorithms from said GPS data including a current position, a heading and a speed to a desired aim point and a desired heading;

said aim point being at least one of: on a straight line with parallel guidance; an interpolated point from a point of closest approach to a previously logged, stored or generated curved track; a series of points defining an edge of a previously traveled swath; and a data file of track points based on best fit algorithms; and

generating a steering command based on said desired radius of curvature to a steering mechanism, said steering mechanism configured to direct said vehicle.

Claim 2 (original). The method of Claim 1, further including receiving differential corrections for said GPS data and correcting said GPS data based on said differential corrections.

Claim 3 (currently amended). The method of Claim 2, wherein said GPS data includes at least one of, carrier phase RTK corrections, [[a]] satellite based differential corrections, and ground based differential corrections.

Claim 4 (original). The method of Claim 2, further including utilizing a DGPS system with dual antennae optimized to generate additional accuracy in said GPS data, further including heading data and generating said compensated heading utilizing said GPS data and said heading data.

Claim 5 (original). The method of Claim 1, further including generating a differential corrector with a reference DGPS receiver and transmitting said differential corrector to the vehicle.

Claim 6 (original). The method of Claim 1, wherein said dynamic calibration includes at least one of rate gyro bias error and scale factor error, during operation, and eliminates static initialization.

Claim 7 (original). The method of Claim 1, further including generating a tilt angle for said vehicle based on at least one of a filtered accelerometer signal and roll signal which can be used to generate a cross track correction based on antenna rotation height to correct for slope induced error in said cross track error.

Claim 8 (original). The method of Claim 1, further including reducing error in an along track velocity and position by rotating an east and north velocity from said GPS data into along track and cross track components using said compensated heading.

Claim 9 (canceled).

Claim 10 (original). The method of Claim 1, wherein said generating a steering command includes generating a command to drive a hydraulic or electrically driven steering system of said vehicle based on a difference between said desired curvature to reach an aim point, a current speed of said vehicle and a rate of turn of said vehicle.

Claim 11 (currently amended). The method of Claim 1, further including offsetting said desired ~~line~~ swath to match differences in spacing of existing tracks to compensate for spacing errors therein.

Claim 12 (original). The method of Claim 1, further including compensating for features in fields with a step in a nominal spacing of parallel guidance lines by offsetting said desired line to align with a current position.

Claim 13 (canceled).

Claim 14 (original). The method of Claim 1, further including real time determination of slope at a current position and application of a swath width adjustment to optimize real ground coverage to yield correct spacing between swaths and additional ground coverage.

Claim 15 (canceled).

Claim 16 (canceled).

Claim 17 (currently amended). The method of Claim 1 wherein said blend includes a combination of said yaw rate signal with said heading information, said yaw rate signal exhibiting high short term accuracy relative to said heading information, while said heading information exhibits high long term accuracy relative to said yaw rate signal.

Claim 18 (currently amended). The method of Claim ~~16~~ 1 wherein said blend employs Kalman filtering techniques.

Claim 19 (currently amended). A system for steering an agricultural vehicle comprising:

a means for receiving global positioning system (GPS) data including position and velocity information corresponding to at least one of a position, velocity, and course of said vehicle:

a means for receiving a yaw rate signal corresponding to a yaw rate of said vehicle;

a means for computing a compensated heading for said vehicle based on an integration of said yaw rate signal, said compensated heading comprising a blend of said yaw rate signal with heading information based on said GPS data, wherein said compensated heading is further dynamically calibrated based on said GPS data;

for each desired swath comprising a plurality of desired positions and desired headings:

a means for computing an actual track and a cross track error from said desired swath based on said compensated heading and said position, wherein said position is compared with a selected desired position of said plurality of desired positions and said compensated heading is compared with a selected desired heading of said plurality of desired headings;

a means for calculating a desired radius of curvature to arrive at said desired ~~track~~ swath with a desired heading;

said desired radius of curvature calculating means including means for generating radius of curvature data based on best fit algorithms from said GPS data including a current position, a heading and a speed to a desired aim point and a desired heading;

said aim point being at least one of: on a straight line with parallel guidance; an interpolated point from a point of closest approach to a previously logged, stored or generated curved track; a series of points defining an edge of a previously traveled swath; and a data file of track points based on best fit algorithms; and

a means for generating a steering command based on said desired radius of curvature to a steering mechanism, said steering mechanism configured to direct said vehicle.

Claim 20 (currently amended). A storage medium encoded with a machine-readable computer program code, wherein said storage medium includes instructions for causing a computer to implement a method for steering an agricultural vehicle comprising:

receiving global positioning system (GPS) data including position and velocity information corresponding to at least one of a position, velocity, and course of said vehicle:.

receiving a yaw rate signal corresponding to a yaw rate of said vehicle:

computing a compensated heading for said vehicle based on an integration of said yaw rate signal, said compensated heading comprising a blend of said yaw rate signal with heading information based on said GPS data, wherein said compensated heading is further dynamically calibrated based on said GPS data;

for each desired swath comprising a plurality of desired positions and desired headings:

computing an actual track and a cross track error from said desired swath based on said compensated heading and said position, wherein said position is compared with a selected desired position of said plurality of desired positions and said compensated heading is compared with a selected desired heading of said plurality of desired headings;

calculating a desired radius of curvature to arrive at said desired ~~track~~ swath with a desired heading;

said desired radius of curvature calculating step including generating radius of curvature data based on best fit algorithms from said GPS data including a current position, a heading and a speed to a desired aim point and a desired heading;

said aim point being at least one of: on a straight line with parallel guidance; an interpolated point from a point of closest approach to a previously logged, stored or generated curved track; a series of points defining an edge of a previously traveled swath; and a data file of track points based on best fit algorithms; and

generating a steering command based on said desired radius of curvature

to a steering mechanism, said steering mechanism configured to direct said vehicle.

Claim 21 (currently amended). A computer system producing a data signal embodied in a computer readable medium:

wherein said computer data signal comprises code configured to cause a computer to implement a method for steering an agricultural vehicle comprising:

receiving global positioning system (GPS) data including position and velocity information corresponding to at least one of a position, velocity, and course of said vehicle;.

receiving a yaw rate signal corresponding to a yaw rate of said vehicle;

computing a compensated heading for said vehicle based on an integration of said yaw rate signal, said compensated heading comprising a blend of said yaw rate signal with heading information based on said GPS data, wherein said compensated heading is further dynamically calibrated based on said GPS data;

for each desired swath comprising a plurality of desired positions and desired headings:

computing an actual track and a cross track error from said desired swath based on said compensated heading and said position, wherein said position is compared with a selected desired position of said plurality of desired positions and said compensated heading is compared with a selected desired heading of said plurality of desired headings;

calculating a desired radius of curvature to arrive at said desired ~~track~~ swath with a desired heading;

said desired radius of curvature calculating step including generating radius of curvature data based on best fit algorithms from said GPS data including a current position, a heading and a speed to a desired aim point and a desired heading;

said aim point being at least one of: on a straight line with parallel guidance; an interpolated point from a point of closest approach to a previously logged, stored or generated curved track; a series of points defining an edge of a previously traveled swath; and a data file of track points based on best fit algorithms; and

generating a steering command based on said desired radius of curvature to a steering mechanism. said steering mechanism configured to direct said vehicle.

Claim 22 (new). The method of Claim 1 wherein said desired radius of curvature calculating step further includes generating radius of curvature data based on specific best fit algorithms for: 1) said vehicle initially heading away from said desired swath; 2) said vehicle initially heading toward said desired swath and beyond said aim point; 3) said vehicle initially heading toward said desired swath and toward said aim point; and 4) said vehicle initially heading toward said desired swath and before said aim point.